



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/553,975	10/19/2005	Young Kyu Son	3449-0545PUS1	8239
2292 7590 01/30/2009 BIRCH STEWART KOLASCH & BIRCH PO BOX 747 FALLS CHURCH, VA 22040-0747				
EXAMINER MOK, ALEX W				
ART UNIT 2834		PAPER NUMBER		
NOTIFICATION DATE 01/30/2009		DELIVERY MODE ELECTRONIC		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mailroom@bskb.com

### Office Action Summary

**Application No.**

10/553,975

**Applicant(s)**

SON ET AL.

**Examiner**

ALEX W. MOK

**Art Unit**

2834

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 05 November 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-16, 18-23 and 30-33 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-16, 18-23 and 30-33 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SF/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Amendment***

1. Acknowledgement is made of Amendment filed November 5, 2008.

### ***Specification***

2. The following title is suggested: Stepping Motor Being Conveniently Assembled.

### ***Claim Objections***

3. Claim 30 is objected to because of the following informalities: in line 7 of claim 30, the term "supporting units" should be corrected to "supporting unit" for consistency within the claim. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-5, 7, 9-14, 18-23, and 30-33 are rejected under 35 U.S.C. 102(b) as being anticipated by Mayumi (US Patent No.: 6541886).

For claim 1, Mayumi discloses a stepping motor comprising a bracket (reference numeral 3, see figure 1); a housing (reference numeral 28) having a first end coupled to the bracket and a second end having a reduced width compared with the first end

(reference numeral 25, figure 1), and an outer surface extending between the first and second ends (see figure 1); a stator disposed in the housing to form electric field (see figure 1); a first supporting unit (reference numeral 42) formed on a first end of the bracket; a magnet (reference numeral 2a) fixed corresponding to the stator to provide the magnetic field; a second supporting unit (reference numeral 41, figure 1) supported on the second end of the housing; a rotor (reference numeral 2) supported by the first and second supporting units; and a stopper (reference numeral 43, figure 1) fitted on an opened end of the second end of the housing to support the second supporting unit, wherein the stopper is coupled to the outer surface of the second end of the housing (see figure 1).

For claim 18, Mayumi discloses the claimed stepping motor as explained for claim 1, and Mayumi also teaches the housing having one end constituting a guide portion for guiding a second supporting unit (see figure 1), and also a third supporting unit on the bracket in which a first side of the rotor is inserted, contacting an opening portion of the housing and a first supporting unit on which a second side of the rotor is rotatably supported (figure 1). Mayumi also discloses the stopper (reference numeral 43) coupled to the outer surface of the guide portion in the radial direction of the rotor to support the second supporting unit (figure 1).

For claim 20, Mayumi discloses a second end of the housing having a reduced width compared with the first end (reference numeral 25), i.e. the guide portion having a reduced diameter compared with the opened portion.

For claim 23, Mayumi discloses a stopper fitted on an opened end of the second end of the housing (i.e. coupled to the guide portion) to support the second supporting unit (figure 1).

For claim 2, Mayumi discloses a third supporting unit formed on a second end of the bracket to support a point of the rotor (reference numeral 23).

For claims 3 and 21, Mayumi discloses a hooking part formed by bending the second end of the bracket (i.e. penetrating hole) and a supporting member inserted in the hooking part (reference numerals 31, 23, figures 1, 2).

For claims 4 and 19, Mayumi illustrates the housing being formed in a single body (figure 1).

For claims 5 and 22, Mayumi discloses the second supporting unit comprising a ball (see figure 1) contacting an end of the rotor; a thrust bearing (reference numeral 41) contacting the ball; and a spring (reference numeral 43a) biased between the thrust bearing and the stopper (i.e. disposed on a rear side of the thrust bearing to attenuate impact from the thrust bearing).

For claim 7, Mayumi discloses the thrust bearing contacting the second end of the housing (see figure 1).

For claims 9-11, Mayumi discloses the stopper being separately prepared and fitted on the second end of the housing (see figure 1), the stopper being cap-shaped (figure 1), and the stopper being fitted on the second end of the housing (see figure 1).

For claim 12, Mayumi discloses the first supporting unit comprising a hooking part defined by bending an end of the bracket and a bearing installed on a penetrating hole of the hooking part (reference numerals 32, 42, figure 1).

For claim 13, Mayumi discloses a pocket formed on an inner surface of the stopper (see figure 1).

For claim 14, Mayumi discloses the stator and the magnet being paired and spaced from each other (see figure 1).

For claim 30, Mayumi discloses a housing having a first end and a second end (reference numeral 28, figure 1), the housing having a guide portion extending in an axial direction (reference numeral 25); a stator disposed in the housing to form an electric field (reference numerals 19, 20); a magnet fixed corresponding to the stator to provide the magnetic field (reference numeral 2a); a supporting unit supported on the second end of the housing (reference numeral 41); a rotor supported by the supporting unit (reference numeral 2); and a stopper (reference numeral 43) fitted on an opened end of the second end of the housing to support the supporting unit, the stopper having a top wall and a depending flange, the depending flange engaging the guide portion to retain the stopper (see figure 1).

For claim 31, Mayumi discloses the guide portion having a reduced radial extent compared to the housing (reference numeral 25, figure 1).

For claims 32 and 33, the features within these claims are taught by Mayumi as explained above for claims 1 and 18, and Mayumi also discloses the second supporting

unit being guided in a radial direction of a rotor axis by the second end of the housing (reference numerals 25, 41, figure 1).

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 6 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mayumi as applied to claims 1 and 5 above, and further in view of Aoshima et al. (US Patent No.: 6255749).

For claim 6, Mayumi discloses the claimed invention except for the spring being formed of a coil spring. It would have been obvious to have this configuration, since Aoshima et al. disclose a stepping motor having a coil spring at the end portion (reference numeral 27, see figure 2), and a person of ordinary skill in the art would have been able to include this technique for the purpose of improving the structure of the bearing.

For claim 16, it would have been obvious for the second end of the housing to have a diameter identical to that of a penetrating hole formed on the bracket, since this would involve a mere change in the size of the component which is generally recognized as an ordinary skill in the art, and also Aoshima et al. illustrate a similar configuration where the penetrating hole of the bracket (reference numeral 23, figure 2)

and the hole at the end of the housing both have smaller diameters than the outer diameter of the motor (see figure 2).

8. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mayumi as applied to claims 1 and 5 above, and further in view of Ueno et al. (US Patent No.: 5811903).

For claim 8, Mayumi discloses the claimed invention except for the thrust bearing being formed of synthetic resin. It would have been obvious to have this configuration since Ueno et al. already teach a motor having bearings made of resin (see column 6, lines 61-64), and a person of ordinary skill would have easily been able to select a known material such as resin for its intended use as exhibited by Ueno et al.

9. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mayumi as applied to claim 1 above, and further in view of Atsumi et al. (US Patent No.: 5113107).

For claim 15, it would have been obvious to have the first end of the housing being coupled to the bracket by a welding or caulking process, since Atsumi et al. disclose the housing and the bracket being welded together (see column 2, lines 35-40), and a person of ordinary skill would have been able to include this configuration for the purpose of improving the assembling precision of the bearing structure.



***Response to Arguments***

10. Applicant's arguments with respect to claims 1-16, 18-23, and 30-33 have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **ALEX W. MOK** whose telephone number is (571)272-9084. The examiner can normally be reached on 7:30-5:00 Eastern Time, 1st Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Quyen P. Leung can be reached on (571) 272-8188. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Quyen P Leung/  
Supervisory Patent Examiner, Art Unit 2834

/A. W. M./  
Examiner, Art Unit 2834